NNI Anniversary – DC Neal Lane's Comments – December 9, 2010

REMARKS (as presented)

Introductory remarks

- Thank you and congratulations to all of you, and the thousands of other scientists and engineers and entrepreneurs who have made the NNI such a success.
- This celebration also gives me an opportunity to congratulate and thank all the federal agency program managers and staff (my heroes) and federal officials – past and present – who have worked so hard through the years in support of the NNI. It is my experience that most presidential S&T initiatives do not continue to prosper for a decade and under three presidents and of different parties.
- I was asked to say something about the history of the NNI; and I'll draw from a paper Tom Kalil and I wrote for the National Academies' journal "Issues in Science and Technology" in 2005.

History of NL's involvement in nanotechnology

- When I got to the NSF in the fall of 1993, I already had an interest in nanoscale research from my Rice days, but I had little understanding of what nanotechnology was all about. For that, I had a great tutor at NSF – Mike Roco.
- Mike saw the growing interest around the country in research in nanoscale science and engineering and he understood as well as anyone the potential impact of a possible new revolutionary technology.
- In 1996, working with other program officers in several federal agencies, Mike formed an "Interagency Working Group" to exchange information and build support for a more coordinated effort.
- In April 1998, at my last NSF House hearing after five years as director, I was asked if I could forecast the future. That's the sort of question one should answer with something like: "I wish I knew the answer to that, Congressman, but the history of science and engineering has shown that it is impossible to predict the future –

- there are always surprises." But for some reason, I said "If I were asked for an area of science and engineering that will most likely produce the breakthroughs of tomorrow, I would point to nanoscale science and engineering." I think I saw some eyes roll.
- In <u>August 1998</u>, when I had the privilege of succeeding the legendary Jack Gibbons as President Clinton's Science Advisor and Director of OSTP, I found that Tom Kalil was already a champion for nanotechnology. Since Tom was a rare "techie" in the National <u>Economic</u> Council, rather than OSTP, where "techies" are everywhere, he had special access to people in the White House whose principal interests were not science and technology.
- Briefly, the steps leading to the NNI went something like this:
- Soon after arriving at OSTP, in the <u>fall of 1998</u>, with the advice of Duncan Moore (OSTP Associate Director for Technology) and his staff, I issued a Review Directive, elevating Mike Roco's Interagency Working Group to be a formal committee of the President's National Science and Technology Council.
- In <u>January 1999</u>, a workshop led by Paul Alivisatos (University of California at Berkeley), Stan Williams (Hewlett Packard) and Mike Roco was held to get expert advice from the community.
- Two Congressional hearings on nanotechnology were held in <u>May 1999</u> (Senate) and <u>June 1999</u> (in the House). Rice University's Rick Smalley, though weakened by cancer, testified in both at the invitation of Mike Roco and predicted that nanotechnology will one day replace chemotherapy, which he described as a "blunt instrument". Sadly, Rick lost his battle with cancer in 2005.
- o In the <u>fall of 1999</u>, the White House (NSTC) released reports based on the outcomes of the workshop and the analysis of the working group. These reports became the basis for the proposed initiative. At all stages it was clear that research on societal implications would be an important part of the overall effort.

- After the proposal was vetted by the relevant agencies and OMB, I asked the President's (external) Committee of Advisors on Science and Technology (PCAST), which I co-chaired with John Young (former CEO of Hewlett-Packard), for their opinion. And based on the report their own independent review committee, chaired by then MIT President Chuck Vest, PCAST endorsed the proposal, and recommended that the NNI be a "top priority" in the President's budget. (Dec. 14, 1999 letter to the President) Norman Augustine was also on PCAST and was a strong supporter of the Initiative.
- o In <u>December</u>, President Clinton held internal White House meetings in which he grilled several of us on competing initiatives. (That's what the holidays are like in the White House!) In the end, Clinton approved the NNI and included in his FY2001 request \$495 million, nearly doubling what the federal government had been spending on research at the nanoscale. Clinton was intrigued with the NNI, calling it "my tiny little initiative", to which I once remarked: "Yes, Mr. President, it is tiny but it requires \$500 million."
- In <u>January 2000</u>, the President travelled to Caltech to roll out his \$3billion "21st Century Research Fund", including the NNI. That turned out to be a banner year for research budgets particularly for the physical sciences and engineering and it increased university research funding by \$1billion. The President's request for NSF was nearly double the largest dollar increase the agency had ever seen.
- With strong support from industry as well as universities, the Congress demonstrated rare bipartisan cooperation and, in November 2000, appropriated most of what the President requested. <u>Thus was born the NNI.</u>
- Just an aside, we recently celebrated at Rice the 25th anniversary of the discovery of the Buckyball carbon 60 as part of a 3-day conference on carbon nanotechnology. Over 1000 attended, and the presentations included talks by Bob Curl, Harry Kroto, Jim Heath and Sean O'Brien, who, with the late Rick Smalley, gave us carbon 60 and the birth of fullerene chemistry

and carbon-based nanotechnology. The Buckyball discovery has been designated a National Historic Chemical Landmark by the American Chemical Society.

A few final observations

- At today's summit, we are celebrating the "NNI at Ten" and will hear about the impact the Initiative has had on our understanding of nanotechnology and its applications

 perhaps even speculate on where nanotechnology will be when we celebrate "NNI at Twenty".
- The NNI has been remarkably successful for a number of reasons. But, the main reason for its success is the progress made in laboratories in universities, industry and government across the country. For that reason, I think we have every reason to be optimistic about the future.
- That said, we are headed for some rough budget years and can't afford to take anything for granted. We will have a lot of work to do with the public and policy makers

Closing

 So, once again – "Happy 10th NNI, and many happy returns!